P. M. QVIST.

HYDROCARBON FURNACE.

No. 169,583. Patented Nov. 2, 1875.

Fig. 1.

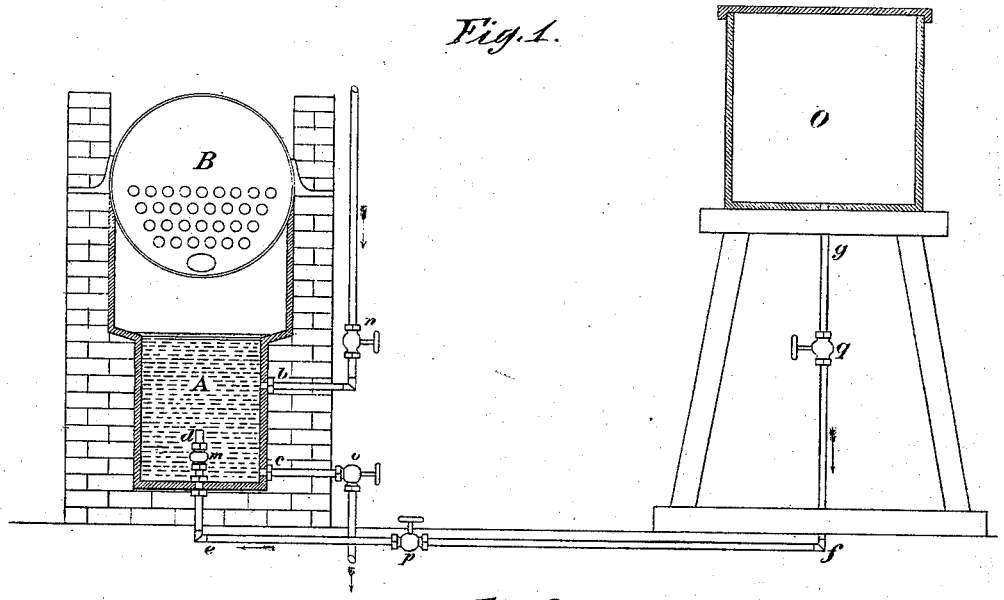
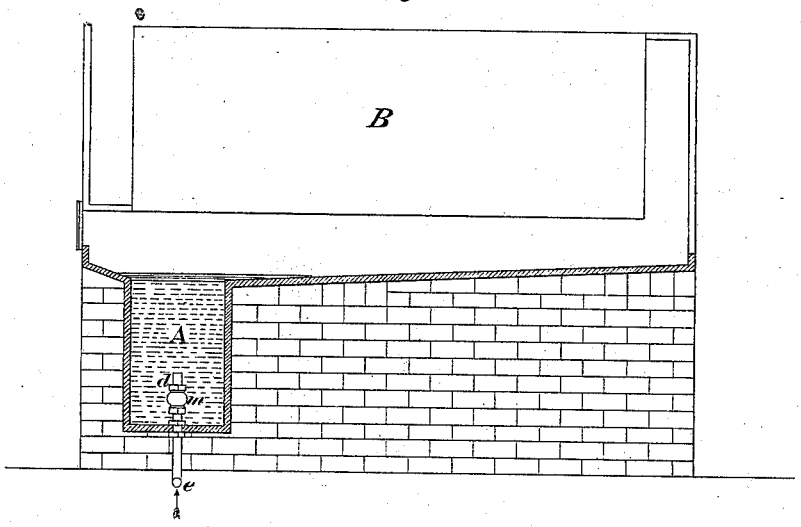


Fig. 2.



Witnesses;
Bernhard Dassel
Sam'l. S. Breed

Inventor;
Peter M. Qvist

UNITED STATES PATENT OFFICE.

PETER M. QVIST, OF ST. PAUL, MINNESOTA, ASSIGNOR OF TWO-THIRDS HIS RIGHT TO HERMANN TROTT AND CASPER KLEIN, OF SAME PLACE.

IMPROVEMENT IN HYDROCARBON-FURNACES.

Specification forming part of Letters Patent No. **169,583**, dated November 2, 1875; application filed September 13, 1875.

To all whom it may concern :

Be it known that I, PETER M. QVIST, of St. Paul, Minnesota, have invented a certain new and useful Improvement in apparatus for burning coal-oil and other oils as fuel, of which the following is a specification :

The nature of my improvement, and the manner in which the same is or may be carried into effect, can best be understood by reference to the accompanying drawing, which represents the application of my said improvement to a stationary boiler.

Figure 1 is a transverse vertical section in a plane passing through the fire-box of the boiler. Fig. 2 is a longitudinal vertical central section of the boiler.

B is a boiler of ordinary or suitable construction. A is a reservoir, occupying the place usually occupied by the fire-box, and in communication, on the one hand, with the oil-feeding pipe *g f e d*, and, on the other hand, with the water-supply pipe, *b*, provided with cock *n*, which controls the admission of water. The oil-feeding pipe leads from an oil-supply tank, O, placed at such height above the reservoir A as to cause the oil to discharge into the reservoir when the oil-feeding pipe is open. The reservoir A is filled with water to the proper height through the water-inlet pipe *b*, and the oil admitted to the reservoir passes up through the body of water and floats and burns on top of the same. Thus far the apparatus does not materially differ from others heretofore suggested and devised. The flow of oil for burning purposes is controlled by the cock *p*, which the engineer opens when the supply of burning oil on the top of the water requires to be replenished. When, after this operation, the cock is closed the feeding-pipe, between the cock and the inner end *d*, is filled with oil that soon is displaced by the water, which takes its place in this portion of the pipe while the oil rises to the upper surface of the reservoir.

This action is disadvantageous for more than one reason. Not only is it difficult to obtain an accurately-defined supply of oil—because, even after the cock is closed, the oil in advance of the cock will continue to rise, and thus furnish more than may be needed for purposes of combustion—but when it is again required to renew the oil-supply the oil, before it can enter the reservoir, must drive before it the water which has entered the pipe, and thus time is lost, and the operation is not performed so quickly, and, indeed, so accurately, as it might otherwise be. To remedy this difficulty I put in the discharging end *d* of the oil-pipe a poppet or check-valve, *m*, which will rise to permit the egress of the oil, but which, the moment the cock *p* is turned off, will, by the superior weight of the water, drop and be tightly closed against any ingress of the water. The oil-pipe is thus kept entirely free from water, and thereby the difficulties above named are entirely obviated, and the oil-supply can be renewed at any time instantaneously, and by only momentarily opening the cock. I provide a second cock, *q*, on the oil-pipe, near the tank, as a safeguard against accidental escape of oil. This cock is designed to be employed to turn off the oil only when the boiler is not in use. An outlet-pipe, *c*, is provided for discharge of water, which may be used either to draw off all the water or to lower the level of the water whenever it may be desired to reduce the fire, or, what is the same thing, remove the flame farther from the boiler and flues. The water-level can be regulated at pleasure by the two cocks *n* and *o*.

Having now described my improvement, what I claim, and desire to secure by Letters Patent, is—

In apparatus for burning oil upon a body of water, substantially as described, the combination, with the water-reservoir and oil-feeding pipe, of a check or poppet-valve, located in the discharging end of the latter, operating to permit ingress of oil from the pipe into the reservoir, and to prevent ingress of water from the reservoir into the pipe, substantially as shown and set forth.

P. M. QVIST.

Witnesses:

BERNHARD DASSEL,

JOHN GOETTELL.